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Myxomycetes from China 17: *Fuligo laevis* and *Physarum simplex*, newly recorded in China

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Abstract—Two species new for China, *Fuligo laevis* and *Physarum simplex*, are herein described and illustrated with microscopic and scanning electronic micrographs. The specimens were collected in Heilongjiang Province and deposited in the Herbarium of Mycological Institute of Jilin Agricultural University, Changchun, China (HMJAU).

Key words—*Physaraceae*, taxonomy, plasmodial slime moulds

Introduction

Two new Chinese records of species of *Physaraceae, Fuligo laevis* and *Physarum simplex,* were found during the examination of our previous myxomycete collections. *Fuligo* is a common genus comprising ten species (Lado 2018), of which seven have been recorded in China (Li 2007, Li & al. 2017). *Physarum,* the largest genus in *Physaraceae*, comprises 142 species (Lado 2018), of which 75 have been recorded in China (Li 2007, Schnittler & al. 2013).

Materials & methods

Specimens of the two newly recorded species were collected in Heilongjiang Province and deposited in the Herbarium of the Mycological Institute of Jilin Agricultural University, Changchun, China (HMJAU).

Test materials on glass slides were wetted with absolute alcohol; one drop of 3% KOH solution was added to cause the spores and other structures to assume plumpness (correcting the contraction effect of alcohol) before the alcohol was completely evaporated; finally, a drop of 8% glycerin was added and a cover glass placed over the rehydrated material prior to microscopical examination (Martin & Alexopoulos 1969). The tissues were observed and photographed using a Zeiss Imager A2 light microscope and a Hitachi SU8010 scanning electron microscope (SEM). For SEM, the dried samples were sputter-coated with gold-palladium to form a 5 nm cover and examined at 5–15 kV.

Taxonomy

Fuligo laevis Pers., Syn. Meth. Fung. 1: 160 (1801) PL. 1

AETHALIUM irregular, pulvinate, about 2.5 cm in cross section and 1 cm thick, pale yellow. CORTEX persistent, almost smooth. HYPOTHALLUS cartilaginous, perforated, pale yellow. PSEUDOCAPILLITIUM branched, impregnated with pale lime. CAPILLITIUM slender, connected to the pseudocapillitium, with pale brown or pale yellow spindle-shaped lime nodes. SPORES free, mass dark, globose, 7.8–8.5 µm in diam., with minute and dense warts.

SPECIMEN EXAMINED: **CHINA, HEILONGJIANG PROVINCE, Yichun**, Liangshui National Nature Reserve, 46°43′48″N 129°54′0″E, 104 m, on the bark surface of dead log, 26 August 2014, Fengyun Zhao, SM2014082616 (HMJAU1017).

COMMENTS: *Fuligo laevis* has been recorded from Europe and USA (Poulain & al. 2011). It is similar to *F. leviderma* H. Neubert & al., but its aethalium is pale yellow in color, and smaller in size (Poulain & al. 2011). The first report of *Fuligo leviderma* from China was from Jilin Province (Li & al. 2017), and we have found it also growing on the bark of a stump in Heilongjiang

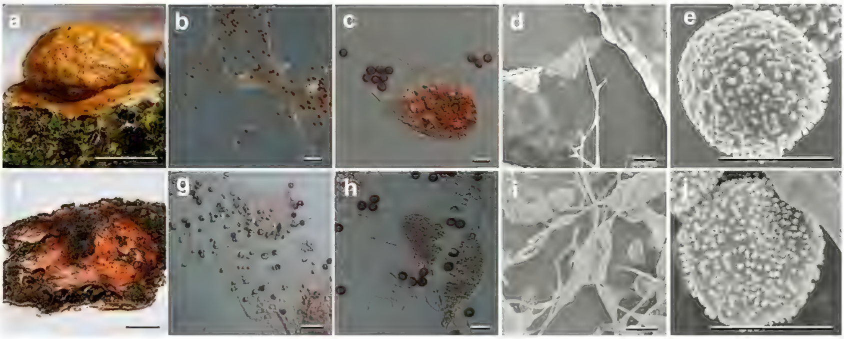

PLATE 1. Morphological comparison of *Fuligo laevis* (HMJAU1017) and *F. leviderma* (HMJAU1018). ***Fuligo laevis***: a. Aethalium; b. Pseudocapillitium under microscope; c. Capillitium with lime-knot under microscope; d. Capillitium with lime-knot under SEM; e. Spores with warts under SEM. ***Fuligo leviderma***: f. Aethalium; g. Pseudocapillitium under microscope; h. Capillitium with lime-knots under microscope; i. Capillitium with lime-knots under SEM; j. Spores with warts under SEM. Scale bars: a, f = 1 cm; b, g = 50 µm; c, h = 20 µm; d, i = 10 µm; e, j = 4 µm.

Province [50°00′36″N 127°16′48″E, 130 m, 17 September 2014, Fengyun Zhao, SM2014091717 (HMJAU1018)]. *Fuligo laevis* and *F. leviderma* are compared morphologically in PLATE 1.

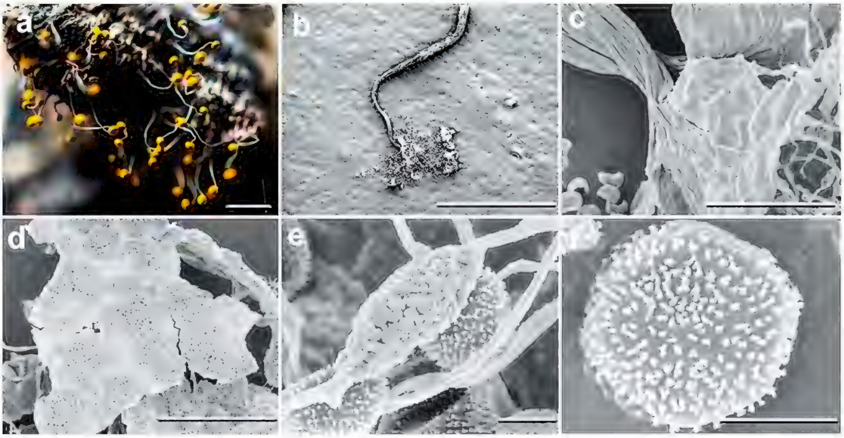

PLATE 2. *Physarum simplex* (HMJAU1019): a. Fruiting bodies growing on decaying bark; b. Stalk with capillitia; c. Stalk connected with peridium; d. Peridium covered with flakes of lime; e. Capillitium with lime node; f. Spores with warts. Scale bars: a, b = 1 mm; c, d = 40 µm; e, f = 4 µm.

Physarum simplex M. Peck, Amer. J. Bot. 19: 136 (1932) PL. 2

SPOROCARPS stipitate, globose, minute, 0.15–0.25 mm in diam., yellowish. STALK very long, 1.5–2 mm, slender, narrowed upward, grooved, often crooked and drooping above, light grey, little or incomplete calcareous. HYPOTHALLUS none. PERIDIUM thin, often strewn with abundant flakes of lime. COLUMELLA none. CAPILLITIUM very delicate threads springing from the peridium, with a few yellowish lime nodes. LIME NODES scanty, fusiform. SPORES violaceous brown, warted, 8–10 µm in diam.

SPECIMEN EXAMINED: **CHINA, HEILONGJIANG PROVINCE, Jiamusi**, Daliangzihe Park, 47°01′48″N 129°40′48″E, 109 m, on the bark of dead log, 25 August 2014, Shuyan Liu & Fengyun Zhao, SM2014082521 (HMJAU1019).

COMMENTS: *Physarum simplex* was originally described from the USA (Lado 2018). It is morphologically similar to *P. flavicomum* Berk. and *P. viride* (Bull.) Pers., but the peridium of *P. flavicomum* is nearly limeless, and its stalk is reddish brown, capillitium persistent, sometimes entirely reticulate, lime nodes scanty, irregular (Poulain & al. 2011). The sporocysts of *P. viride* are subglobose or flattened at base, and its stalk is pale yellowish or reddish, and partially near black; the lime nodes are usually elongated and fusiform (Poulain & al. 2011).

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